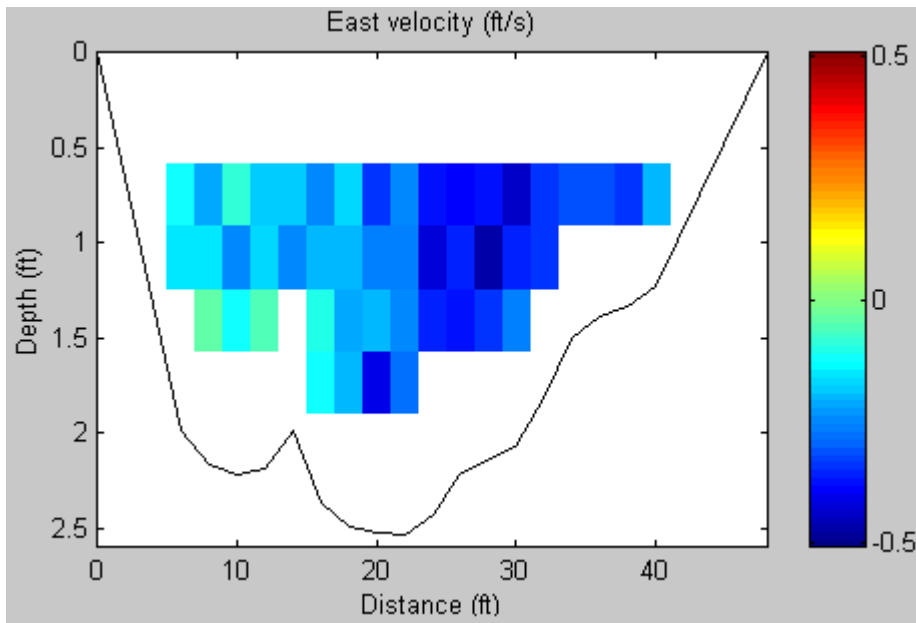


# Nortek Aquadopp Current Profiler

## Flow in a Shallow River

The data in Figure 1 illustrate what the Aquadopp Profiler is able to do with 5 cm blanking and 10 cm cells. The instrument produced no apparent bias in the top cell, and the integrated discharge based on the Aquadopp Profiler data was within 1% of the discharge based on a nearby USGS gage.

*Note: discharge was computed manually using traditional USGS methodology. Nortek does not produce software for computing integrated discharge using profiler data.*



*Figure 1. Measured east-west velocity from Fall Creek in Indianapolis. Fall Creek is oriented nearly east-west, and westward velocity is downstream.*

Data were collected with 5 cm (2") blank and 10 cm (4") cells. The transducer was immersed 8 cm (3"). Data were recorded with a 2 s interval and a 300 s duration for each of 18 verticals in 2' increments across Fall Creek (Figure 2). Depth was computed using a method given in Visbeck and Fischer (Sea surface conditions remotely sensed by upward-looking ADCPs. J. Atmos. and Oceanic Technol., 12, 141-149, 1995).



*Figure 2. USGS Hydrologist Scott Morlock holds the Aquadopp Profiler on station during a measurement. The profiler was mounted on a tethered boat designed for river discharge measurement using Doppler profilers. Data were telemetered to a PC on the riverbank.*

Integrated discharge was computed using velocity-area computations for the areas where the profiler measured velocity. Flow above and below the measured areas was obtained using a 1/6-power law extrapolation. Flow at either side was estimated assuming a mean velocity in the side regions of 0.7 of the average velocity at the nearest measured vertical. The USGS also routinely monitors water level at this site and uses a well-established stage-discharge relationship to compute discharge. Scott did not report the USGS gage discharge until after the Aquadopp Profiler discharge was computed. The results are:

Aquadopp Profiler	63.3 cfs
USGS gage*	63.0 cfs

\* Discharge data supplied by the USGS is provisional and subject to revision.